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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/701,232	07/05/2001	Preeti Lal	PF 0525 USN	7102

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EXAMINER	
HAMUD, FOZIA M	

ART UNIT	PAPER NUMBER
1647	

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/701,232	LAL ET AL.	
	Examiner	Art Unit	
	Fozia M Hamud	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) *30,33-35 and 38-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-29,31,32,36 and 37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *07/07/03* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Detailed Office Action

1a. Receipt of Applicants' amendments and arguments filed 07 July 2003 is acknowledged. Claims 21, 22, 25, 29, 31 and 37 have been amended. Claims 21-40 are pending. Claims 21-29, 31-32 and 36-37 are under consideration. Claims 30, 33-35, 38-40 stand withdrawn from consideration as they are drawn to non-elected inventions.

1b. Receipt of Applicants' declarations under 37 C.F.R §1.132, filed on 25 June 2003, by Dr. Bedilion and Mr. Furness, is also acknowledged.

Election/Restrictions:

2. Applicants' believe that upon allowance of the product of claim 21, method claims of making and using said product, will be rejoined as long as the method claims do not precipitate new grounds of rejections is accurate.

3. The following previous objections and rejections are withdrawn in light of Applicants amendment filed on 07/07/03:

(I) The objection to claims 21-29, 31-32 and 36-37 for reciting non-elected SEQ ID Nos.

(II) The objection to the specification for not containing an abstract and for not having correct priority data.

(III) The rejection of claims 21-29 made under 35 U.S.C. 112, second paragraph.

Related Applications:

4. It is acknowledged that U.S Application number 09/447,939 is a continuation of PCT/US99/11497 and that instant application is a national stage filed under 35 U,S.C.

371 of international application PCT/US99/11497. It is also acknowledged that U.S Application Number 09/216,006 which was incorporated by reference on page 46, line 18 of the instant specification has been converted to provisional application number 60/150,701.

Claim Rejections under 35 U.S.C. §101/112:

5a. Claims 21-29, 31-32 and 36-37 stand rejected under 35 U.S.C. §101 for reasons of record set forth in the office action mailed on 21 February 2002, pages 5-8.

Applicants argue the claimed invention is directed to a polynucleotide encoding a polypeptide (HSCOP-5) having homology to SOCS proteins, and can be used in expression profiling, in particular of diagnosis of conditions or diseases characterized by expression of HSCOP-5, for toxicology testing and for drug discovery, and none of these uses require the knowledge of how the polypeptide coded by the claimed polynucleotide actually functions. Applicants further argue that the claimed nucleic acid is expressed in cDNA libraries made from reproductive, cardiovascular, cancer-associated, inflammation and fetal tissues. Applicants also contend that the fact the claimed invention belongs to SCOS protein family demonstrates utility, since each member of this family is useful regardless of its function. Applicants contend that Dr. Bedilion's declaration demonstrates that the claimed polynucleotide can be used in gene expression monitoring applications. Applicants also submit that the Furness Declaration explains that the claimed polypeptide can be used in the creation of protein expression maps using 2-D PAGE. Applicants argue that post-filing reference confirms Applicants' prior identification of HSCOP-5 as a member of SOCS protein family,

(Vasiliauskas et al disclose a protein having 100% identity to SEQ ID NO:5, which they identify as human Swip-1). Finally Applicants contend that the patent examination utility guidelines and training material misstate the law by requiring that patent applicants must assert a particular or unique utility.

Applicants' arguments have been fully considered, but are not deemed persuasive.

With respect to Applicants' first argument, Applicants do not demonstrate that having homology to or being a member of SOCS protein family assures the claimed polynucleotide and the encoded polypeptide with a utility common to all the members of this family. The fact that other members of this family have utility is irrelevant, since the physiological relevance of the claimed nucleic acid or the encoded polypeptide must be disclosed, in order to meet the requirements under 35 U.S.C. §101. With respect to Applicants argument that the claimed nucleic acid can be used for diagnosis, the polypeptide of the instant invention can not be used for diagnosing conditions or diseases, because Applicants have not taught which diseases or conditions are characterized by expression of HSCOP-5. Neither do Applicants demonstrate whether the over-expression of HSCOP-5 leads to any disorder or whether it is the under-expression of HSCOP-5 that leads to a condition, and if so which disorders or conditions? Furthermore, having an SOCS box does not impart a utility common to all proteins having this box, however, the physiological significance (which is distinct from physiological function) of the claimed sequence must be disclosed, in order for the claimed sequence to be useful diagnostically or therapeutically. A specification can

meet the legal requirements of utility and enablement for a new polynucleotide as long as the specification discloses a credible, specific and substantial asserted utility for the new polynucleotide, or a well-established utility for the claimed polynucleotide. For example, if a novel polynucleotide is shown to be expressed in colon cancer and not expressed in healthy colon tissue, but there is no disclosure of the biological activity of the polypeptide encoded by the polynucleotide, said polynucleotide would not be rejected under 35 U.S.C. §§ 101 and 112, first paragraph, as it has utility and is enabled as a colon cancer marker. However, such is not the fact pattern in the instant case. Also, using the polypeptide of the instant invention for drug discovery, or for toxicology testing does not provide the claimed invention with specific or substantial utility, since any protein can be used for these general purposes. Furthermore, Applicants have failed to identify compounds toxic to the protein of the instant invention, nor organs susceptible to said toxicity. Applicants' disclose that the claimed nucleic acid is expressed in cDNA libraries made from reproductive, cardiovascular, cancer-associated, inflammation and fetal tissues, however, they do not demonstrate the significance of this expression, or the role of this protein in these tissues once it is expressed.

Applicant's arguments that the claimed nucleic acid can be used in gene and protein expression monitoring applications, is also not persuasive. Using the claimed nucleic acid in gene expression monitoring does not provide the claimed invention specific utility, because no meaningful information will be obtained from tracking the level of expression of the claimed nucleotide, because there is no physiological or

biological significance attached to this nucleotide or the encoded protein. Without a disclosure of a particular disease state in which the claimed polynucleotides are expressed at an altered level or form, it would be impossible to determine what the results of a gene expression monitoring assay mean. For example, if a compound is tested on a microarray comprising the claimed polynucleotides and affects expression of the polynucleotides negatively, it cannot be determined if that means that the compound is a potential good drug for a disease or would acerbate the disease if administered. The test results also would not have meaning in terms of what specific disease is relevant. The asserted utility in gene expression monitoring assays is thus not substantial, because significant further research would have to be conducted to determine which diseases correlate with altered forms or levels of the claimed polynucleotides, and whether the claimed polynucleotides are overexpressed or underexpressed in the diseased tissue. Furthermore, since any expressed polynucleotide can be added to a microarray for gene expression monitoring, the asserted utility is not specific to the claimed polynucleotides. The specification does not disclose that the claimed gene is a marker for specific diseases. Absent a disclosure of altered levels or forms of a gene in diseased tissue as compared with the corresponding healthy tissue, the gene is not a disease marker or an appropriate target for drug discovery or toxicology testing. The fact that there is an entire multi-billion dollar industry on gene chip technology, does not provide the claimed invention with specific or well established utility, because, this revolutionizing technology enables scientists to attain ambitious goals from identifying genetic variations associated with disease to

discovering new drug targets, however, instant application is not drawn to a novel gene chip technology, but rather to nucleic acid sequences with no known physiological role. Furthermore, evidence of commercial success, while sometimes persuasive as secondary evidence of non-obviousness, is immaterial to utility and enablement. Many products have enjoyed commercial success due to fads or clever advertising, wherein the products would not have met the legal standards for utility and enablement.

The disclosure that Vasiliauskas et al reference discloses a protein having 100% identity to instant SEQ ID NO:5, confirming that the claimed HSCOP-5 is a member of the SOCS protein family does not provide a utility for the polypeptide of the instant invention, because the reference does not disclose the physiological role of the polypeptide or the polynuceotide of the instant invention. Applicants' assertion that the polypeptide of the instant invention is a member of the SOCS protein family is not disputed, however, being a member of that family does not impart a utility common to all the members of this family.

Finally, Applicant's argument that the patent examination utility guidelines and training material misstate the law, will not be answered by the Examiner. The contents of 35 U.S.C, 37 C.F.R, judicial decisions, and guidelines established by the USPTO are not subject to examiner review and will not be questioned or defended by the Examiner. These decisions made by legally empowered government entities to which the Examiner is subordinate and those decisions will be followed without question by the examining corps.

5b. Claims 21-29, 31-32 and 36-37 also stand rejected under 35 U.S.C. 112, first paragraph, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, because one skilled in the art clearly would not know how to use it.

5c. Claims 21, 23, 26, 27, 28, 31, 32 and 36 are further rejected under first paragraph of 35 U.S.C 112, for lacking adequate written description.

Applicants contend that the claimed polypeptide variants are naturally occurring variants, therefore, one of ordinary skill in the art does not have to know which amino acids or nucleotide are altered. One of ordinary skill in the art can determine which naturally occurring variants fall within 90% of the claimed sequences, thus, one can make these sequences. With respect to how to use these variants, the office has not provided any reason why would one doubt that they are useful. Applicants request clarification whether claims 21-29, 31-32, 36-37 are rejected under first paragraph of 35 U.S.C 112, for alleged lack of an adequate written description. Applicants argue that instant specification describes the variants of the claimed sequences and that there is no requirement that the claims recite particular variant sequence because the claims already provide sufficient structural and chemical definition of the claimed subject matter.

These arguments have been fully considered but are not found persuasive. Firstly, claims 21-29, 31-32, 36-37 stand rejected under first paragraph of 35 U.S.C 112, for lack of enabling disclosure, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set

forth above in paragraph 5a, one skilled in the art clearly would not know how to use the invention claimed in these claims. Secondly, in the event that Applicants provide specific and substantial utility for the polypeptide of SEQ ID NO: 5, instant specification would still fail to adequately describe and enable an isolated polypeptide comprising an amino acid that has at least 90% identity to the polypeptide of SEQ ID NO:5, as recited in claim 21 or an isolated polynucleotide comprising at least 90% identical to the polynucleotide of SEQ ID NO:14, as recited in claim 31. Page 14 of the instant specification discloses that variants of the HSCOP5 may have conservative or non-conservative changes, however, no other disclosure about variants is made. With respect to naturally occurring variants, instant specification only discloses the polypeptide comprising the amino acid sequence set forth in SEQ ID NO:5 and the nucleic acid of SEQ ID NO:14, but fails to describe the structure of any variant to either of these products. Applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed.

Therefore, the structure of a polypeptide having at least 90% identity to SEQ ID NO:5, or an isolated polynucleotide comprising at least 90% identical to SEQ ID NO:14, has not been disclosed, in order to satisfy the written description provision of 35 U.S.C. 112, first paragraph. As a result, it does not appear that the inventors were in possession of a a polypeptide having at least 90% identity to SEQ ID NO:5, or an isolated polynucleotide comprising at least 90% identical to SEQ ID NO:14.

5d. Claims 21, 23, 26, 27, 28, 31, 32 and 36 are also rejected under 35 U.S.C. 112, first paragraph for lack of enablement. It is well known in the prior art that changes in a nucleotide sequence can have a dramatic affect on the protein product encoded by the sequence, and that changes in the amino acid would also change the function of the protein. While the degeneracy of the genetic code accommodates some variation in the nucleotide sequence, the extent of variation disclosed go far beyond alternate codons for the same amino acid. A skilled artisan would expect that the variation in the polynucleotide sequence would at best code for a polypeptide that has impaired function and at worst be either nonfunctional or an entirely different product from that of the claimed invention. Therefore, it would be impossible to predict with certainty the effect of a substitution, insertion, or deletion of a series of nucleotides, or even one nucleotide, on the encoded product. In order to make an accurate assessment of the modifications encompassed by these claims and to determine the function of the encoded protein would require undue experimentation.

With respect to amino acid modifications, the instant specification does not provide the guidance needed to predictably alter by 10%, i.e. 42 amino acids in SEQ ID NO:5, with any reasonable expectation that the resulting protein will have the desirable biological activity.

Therefore, one of ordinary skill in the art would not know how to make or use all of the polypeptides and polynucleotides having 90% identity to SEQ ID NO:5 or SEQ ID NO:14, respectively, as encompassed by claims 21 and 31.

Claims 23, 26-28, 32 and 36 are also rejected under 35 U.S.C. 112, first paragraph, so long as they depend on claims 21 and 31 for the limitations set forth directly above.

37 CFR 1.132 Declaration:

6. The declarations under 37 C.F.R §1.132, filed on 25 June 2003 are insufficient to overcome the rejection of 21-29, 31-32 and 36-37 made under 35 U.S.C. 101/112.

The Declaration submitted by Dr. Bedilion and Mr. Furness have been fully considered, but are deemed unpersuasive.

Dr. Bedilion submits that he would have understood from the instant disclosure that the nucleic acid of SEQ ID NO:14 can be used in a number of gene expression moitoring applications at the time that this application and its parent application were filed. Dr. Bedlilion gives a lengthy information about gene expression monitoring applications, in particular, microarray technology. Mr. Furness also contends that the polypeptide of SEQ ID NO:5 is highly useful in analysis of differential expression of proteins.

However, using the claimed nucleic acid in gene expression monitoring does not provide the claimed invention specific utility, because no meaningful information will be obtained from tracking the level of expression of the claimed nucleotide, because there is no physiological or biological significance attached to this nucleotide or the encoded protein. Without a disclosure of a particular disease state in which the claimed polynucleotides are expressed at an altered level or form, it would be impossible to determine what the results of a gene expression monitoring assay mean. For example,

if a compound is tested on a microarray comprising the claimed polynucleotides and affects expression of the polynucleotides negatively, it cannot be determined if that means that the compound is a potential good drug for a disease or would acerbate the disease if administered. The test results also would not have meaning in terms of what specific disease is relevant. The asserted utility in gene expression monitoring assays is thus not substantial, because significant further research would have to be conducted to determine which diseases correlate with altered forms or levels of the claimed polynucleotides, and whether the claimed polynucleotides are overexpressed or underexpressed in the diseased tissue. Furthermore, since any expressed polynucleotide can be added to a microarray for gene expression monitoring, the asserted utility is not specific to the claimed polynucleotides. The specification does not disclose that the claimed gene is a marker for specific diseases. Absent a disclosure of altered levels or forms of a gene in diseased tissue as compared with the corresponding healthy tissue, the gene is not a disease marker or an appropriate target for drug discovery or toxicology testing. The fact that there is an entire industry on gene expressing technology, does not provide the claimed invention with specific or well established utility, because, this revolutionizing technology enables scientists to attain ambitious goals from identifying genetic variations associated with disease to discovering new drug targets, however, instant application is not drawn to a novel gene chip technology, but rather to nucleic acid sequences with no known physiological role. Furthermore, evidence of commercial success, while sometimes persuasive as secondary evidence of non-obviousness, is immaterial to utility and enablement. Many

products have enjoyed commercial success due to fads or clever advertising, wherein the products would not have met the legal standards for utility and enablement.

Conclusion:

7. No claim is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Advisory Information:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fozia M Hamud whose telephone number is (703) 308-8891. The examiner can normally be reached on Monday, Wednesday-Thursday, 6:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Kunz can be reached on (703) 308-4623. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Fozia Hamud
Patent Examiner
Art Unit 1647
02 October 2003

Gary A. Kunz

GARY KUNZ
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